

EXHIBIT R

MISSOURI
BUREAU OF GEOLOGY
AND MINES



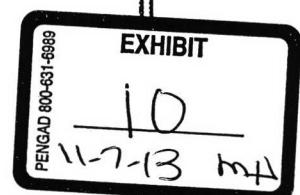
BIENNIAL REPORT *of the*
STATE GEOLOGIST

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H. A. BUEHLER
DIRECTOR AND STATE GEOLOGIST
ROLLA, MISSOURI



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Sandstone.

Only one quarry reported production of sandstone in 1918. There has been a gradual decline in the use of sandstone for structural purposes during the past fifteen years. Crushed rock has taken the place of rubble and rough building stone for many structural purposes and the greater durability of limestone has displaced it as a building stone.

The following quarries have been operated intermittently during the past four years.

PRODUCERS OF SANDSTONE IN MISSOURI IN RECENT YEARS.

Producer.	Use.	Location.
<i>Callaway County.</i>		
H. R. Miller.....	Miscellaneous.....	Fulton.
Oscar L. Taylor.....	Rough building.....	Fulton.
<i>Carroll County.</i>		
Carroll County Sandstone Co.....	Riprap.....	Carrollton.
<i>Johnson County.</i>		
Benjamin Pickle.....	Rough and dressed building, rubble.....	Warrensburg.

Chats.

Chats is the term applied at the lead and zinc mines of Missouri to the mine tailings or waste after the mineral content has been removed. In the southeastern district the chats are chiefly dolomite, while in the southwest the chat from the sheet-ground mines is mainly chert, that from the open-ground mines being mixed chert and limestone.

In 1918 and 1919 the shipments of chats dropped to the lowest figure since 1909. The decrease was largely due to the pronounced shortage of freight cars and to the curtailment of building operations. There is a large use of chats in local building and road construction for which there is no report.

The figures for the last eleven years are as follows:

PRODUCTION OF CHATS IN MISSOURI, 1909-1919.

Year.	Railroad use (tons).	Commercial use (tons).	Total.	Value.
1909.....	355,901	472,934	828,835	\$124,325
1910.....	1,009,533	610,789	1,620,322	243,048
1911.....	865,011	638,592	1,503,603	225,540
1912.....	1,911,705	811,698	2,723,403	408,510
1913.....	1,231,005	797,884	2,028,889	304,333
1914.....	1,687,331	583,440	2,270,771	340,616
1915.....	1,713,884	595,307	2,309,191	346,379
1916.....	2,268,370	622,600	2,890,970	433,646
1917.....	1,010,620	416,096	1,426,716	214,007
1918.....	627,335	274,794	902,129	135,319
1919.....	827,700	548,057	1,375,757	206,353

Chats have been used principally for cement concrete construction, for railroad ballast and in the construction and repair of highways.

Silver.

In 1918 Missouri produced 46,939 ounces of silver valued at \$46,939. Of this amount 7,872 ounces were derived from copper ores and copper concentrates, and 39,047 ounces from lead concentrates produced in the disseminated lead district of Southeast Missouri. The lead concentrates carry about one ounce per ton and only about one sixth of the total output of the district is treated for the recovery of silver.

The Einstein silver mine in Madison County produced argentiferous galena running as high as 40 ounces per ton. This ore occurred with tungsten in a quartz vein of the true fissure type. Other than this deposit there are no ores in the State that may be designated as gold or silver ores. This Bureau receives each year many samples taken from the various formations throughout Missouri which are assayed carefully. These samples include sandstone, dolomite, limestone, porphyry, and granite, but in no case has more than a trace of either metal been found.

Tripoli.

The production of tripoli for 1918 was 6778 short tons valued at \$81,728. This included both raw and prepared tripoli, over 95 per cent being prepared. The decrease in production may be ascribed to general industrial conditions rather than to the working out of the deposits or to a decrease in use.

The figures for the production of the last ten years are as follows:

PRODUCTION OF TRIPOLI IN MISSOURI, 1910-1918.

Year.	Quantity (short tons).	Value.
1910.....		\$71,978
1911.....		72,701
1912.....		75,565
1913.....		83,995
1914.....	6,721	81,434
1915.....	6,970	68,451
1916.....	8,570	92,248
1917.....	8,303	90,923
1918.....	6,778	81,728

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